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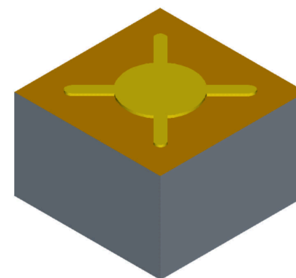
# GaAlAs-Infrarot-Lumineszenzdiode (880 nm)
# GaAlAs Infrared Emitting Diode (880 nm)

## F 1047A
## F 1047B



## Vorläufige Daten / Preliminary Data

### Wesentliche Merkmale

- Typ. Gesamtleistung: 22 mW @ 100 mA im TOPLED® Gehäuse
- Chipgröße 300 x 300 $\mu m^2$
- GaAlAs-LED mit sehr hohem Wirkungsgrad
- Hohe Zuverlässigkeit
- Hohe Impulsbelastbarkeit
- Gute spektrale Anpassung an Si-Fotoempfänger
- Vorderseitenmetallisierung: Aluminium Rückseitenmetallisierung: Goldlegierung
- Lieferung: vereinzelt auf Folie

### Features

- Typ. total radiant power: 22 mW @ 100 mA in TOPLED® package.
- Chipsize: 300 x 300 $\mu m^2$
- Very highly efficient GaAlAs LED
- High reliability
- High pulse handling capability
- Good spectral match to silicon photodetectors
- Frontside metallization: aluminum Backside metallization: gold alloy
- Delivery: diced on foil

### Anwendungen

- IR-Fernsteuerung von Fernseh-, Rundfunk- und Videogeräten, Lichtdimmern
- Gerätefernsteuerungen für Gleich- und Wechsellichtbetrieb
- Lichtschranken bis 500 kHz
- Sensorik
- Diskrete Optokoppler

### Applications

- IR remote control for hifi and TV sets, video tape recorder, dimmers
- Remote control for steady and varying intensity
- Light-reflection switches (max. 500 kHz)
- Sensor technology
- Discrete optocouplers

| Typ<br>Type | Bestellnummer<br>Ordering Code | Beschreibung<br>Description |
|---|---|---|
| F 1047A | Q67220-C1386 | Infrarot emittierender Chip, Oberseite Kathodenanschluss<br>Infrared emitting die, top side cathode connection |
| F 1047B | on request | Infrarot emittierender Chip, Oberseite Kathodenanschluss, Oberfläche aufgerauht.<br>Infrared emitting die, top side cathode connection, surface frosted |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**Elektrische Werte** ($T_A$ = 25 °C)
**Electrical values**[1] ($T_A$ = 25 °C)

| Bezeichnung<br>Parameter | Symbol<br>Symbol | Wert<br>Value[2] | | | Einheit<br>Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| Emissionswellenlänge<br>Peak wavelength<br>$I_F$ = 10 mA | $\lambda_{peak}$ | | 880 | | nm |
| Spektrale Bandbreite bei 50% von $I_{max,}$<br>Spectral bandwidth at 50% of $I_{max}$<br>$I_F$ = 10 mA | $\Delta\lambda$ | | 100 | | nm |
| Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, bei $I_F$ = 100 mA, $R_L$ = 50 Ω<br>Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F$ = 100 mA, $R_L$ = 50 Ω | $t_r$, $t_f$ | | 0.5/0.4 | | µs |
| Sperrspannung<br>Reverse voltage<br>$I_R$ = 1µA | $V_R$ | 5 | | | V |
| Durchlaβspannung<br>Forward voltage<br>$I_F$ = 100 mA | $V_F$ | | | 1.9 | V |
| Strahlungsleistung<br>Radiant Power[3]<br>$I_F$ = 100 mA<br>F1047A<br>F1047B | $\Phi_e$ | | <br><br><br>12<br>14 | | <br><br><br>mW<br>mW |
| Photostrom (Spezifikationsparameter)<br>Photocurrent (specified parameter)<br>$I_F$ = 100 mA<br>F1047A<br>F1047B | $I_e$ | <br><br><br>0.50<br>0.65 | | | <br><br><br>a.u.<br>a.u. |

[1] *Measurement limits describe actual settings and do not include measurement uncertainties. Each wafer and each fragment of a wafer is subject to final testing. The wafer or its pieces are individually attached on foils (ring). Sample chips are picked from each foil and placed on a special carrier for measurement purposes. The sampling density is one chip per 1cm². If a sample fails, the area around that sample is tested again by taking samples in fourfold density. If a sample fails in that measurement, an area of 0,25 cm² around each failed sample is marked by pen.*
*All el. values are referenced to the vendor's measurement system (correlation to customer product(s) is required)*

[2] *Typical (refered to as typ.) data are defined as long-term production mean values and are only given for information. This is not a specified value*

[3] *Radiant power is measured on TO-18 header in integrating sphere.*





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## Mechanische Werte
## Mechanical values

| Bezeichnung<br>Parameter | Symbol<br>Symbol | Wert<br>Value[1] | | | Einheit<br>Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| Chipkantenlänge (x-Richtung)<br>Length of chip edge (x-direction) | $L_x$ | 0.28 | 0.30 | 0.32 | mm |
| Chipkantenlänge (y-Richtung)<br>Length of chip edge (y-direction) | $L_y$ | 0.28 | 0.30 | 0.32 | mm |
| Durchmesser des Wafers<br>Diameter of the wafer | $D$ | | 48 | | mm |
| Chiphöhe<br>Die height | $H$ | | 210 | | µm |
| Bondpaddurchmesser<br>Diameter of bondpad | d | | 130 | | µm |

## Weitere Informationen
## Additional information[2]

| | |
|---|---|
| Vorderseitenmetallisierung<br>Metallization frontside | Aluminium<br>Aluminum |
| Rückseitenmetallisierung<br>Metallization backside | Goldlegierung<br>Au-Alloy |
| Trennverfahren<br>Dicing | Sägen<br>Sawing |
| Verbindung Chip - Träger<br>Die bonding | Kleben<br>Glueing |

[1] *Typical (refered to as typ.) data are defined as long-term production mean values and are only given for information. This is not a specified value*

[2] *All chips are checked according to the following procedure and the OSRAM OS specification of the visual inspection A63501-Q0013-N001-*-76G3:The visual inspection shall be made in accordance to the "specification of the visual inspection" as referenced.The visual inspection of chip backside is performed by eye for 100% of the area of each wafer. If decisions (good/bad) are not possible additional a stereo microscope with incident light with 40x-80x magnification is used. Areas > ¼ cm² which have an amount of more than 5% failed dies will be marked manually with pen.The visual inspection of chip frontside is performed by a stereo microscope with incident light with 40x-80x magnification for 100% of the area of each wafer.Areas greater than 5x5 mm² and with a failure density higher than 25% are marked by pen and inked around. Areas with failure density higher than 10% each failure die is inked individually.The inked area from backside must be transfered to frontside and has to be marked manually with pen and inked around.The quality inspection (final visual inspection) is performed by production. An additional visual inspection step as special release procedure by QM after the final visual inspection is not installed.*



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## Grenzwert[1)]
## Maximum Ratings

| Bezeichnung<br>Parameter | Symbol<br>Symbol | Wert<br>Value | Einheit<br>Unit |
|---|---|---|---|
| Maximaler Betriebstemperaturbereich<br>Maximum Operating temperature range | $T_{op}$ | -40...+100 | °C |
| Maximaler Lagertemperaturbereich<br>Maximum storage temperature range | $T_{stg}$ | -40...+100 | °C |
| Maximaler Durchlaßstrom<br>Maximum forward current | $I_F$ | 100 | mA |
| Maximaler Stoßstrom<br>Maximum surge current<br>$t_p$ = 10 µs, D = 0.005 | $I_S$ | 2.5 | A |
| Maximale Sperrschichttemperatur<br>Maximum junction temperature | $T_j$ | 125 | °C |

*[1)]Maximum ratings are strongly package dependent and may differ between different packages. The values given represent the chip in a TO-18 package.*





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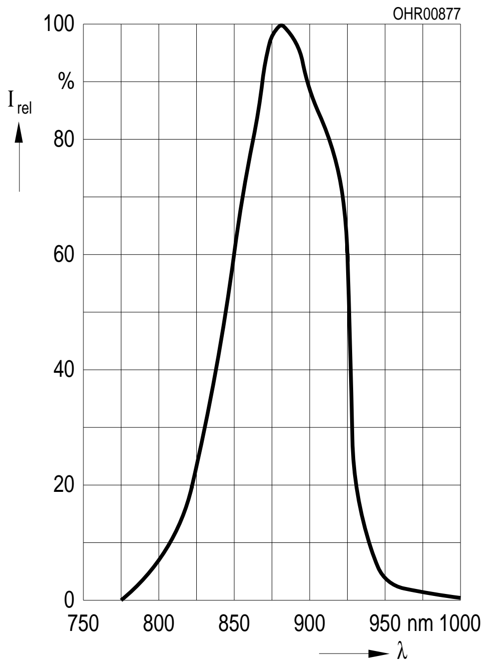
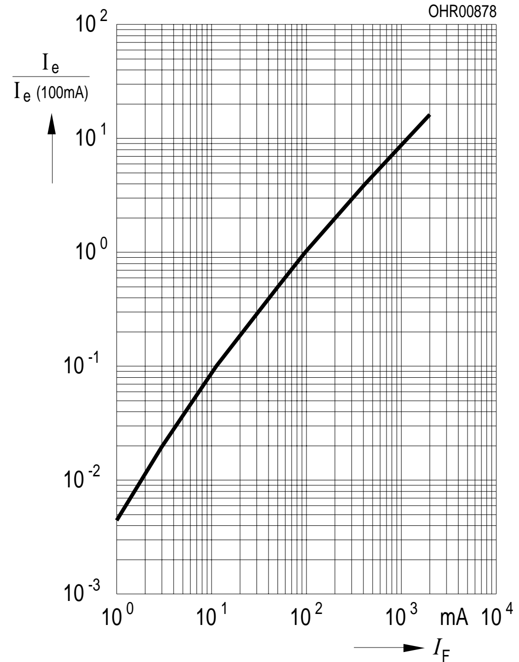
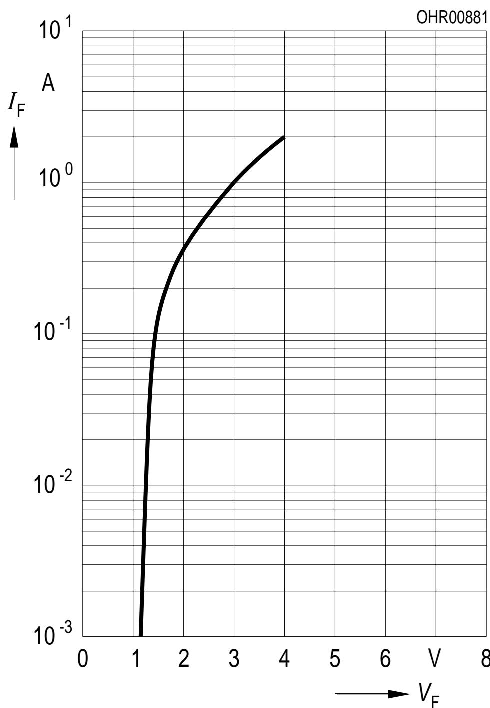
**Relative Spectral Emission**[1)] $I_{Frel} = f(\lambda)$
$T_A$ = 25 °C



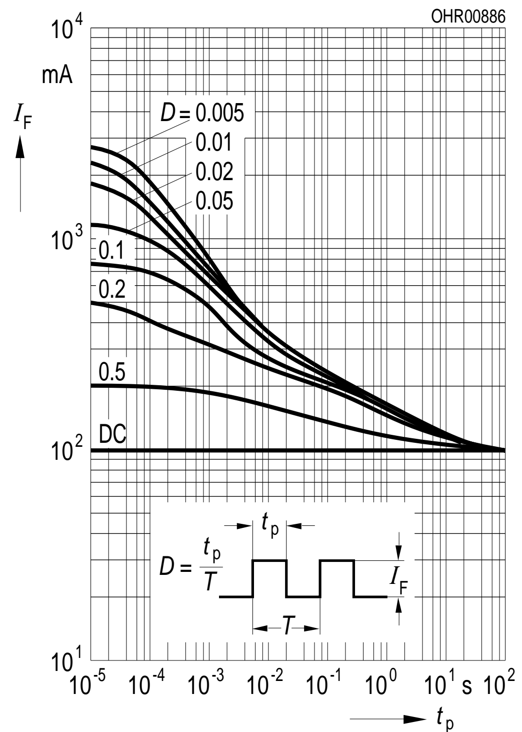

**Radiant Intensity**[1)] $I_e/I_e(100mA) = f(I_F)$
$T_A$ = 25 °C, single pulse: $t_p$ = 20 µs




**Forward Current**[1)]
$I_F$= f ($V_F$), Single pulse, $t_p$ = 20 ms, $T_A$ = 25 °C




**Permissible Pulse Power**[1)]
Duty cycle D = parameter, $T_A$ = 25 °C




1) *Based on typ.(see page 2, footnote 2 for explanation) data measured in OSRAM Opto Semiconductor's TOPLED® package.*





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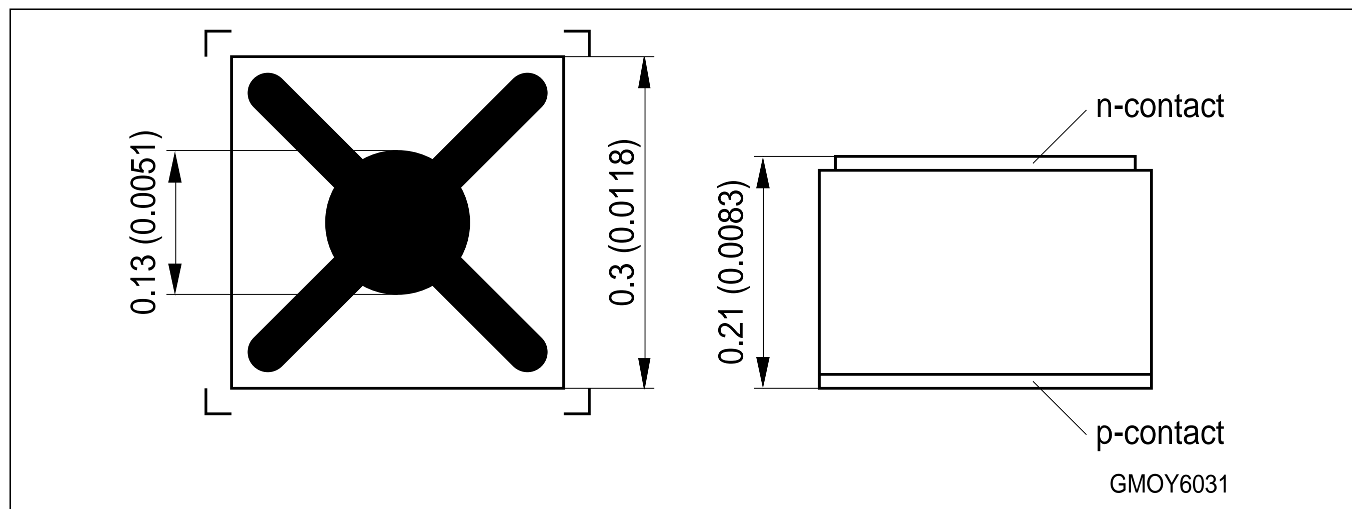
**Maßzeichnung**
**Chip Outlines**




Maße werden als typische[1)] Werte wie folgt angegeben: mm (inch) / Dimensions are specified as typical[1)] values as follows: mm (inch).

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Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our sales organization.

**Handling and Storage Conditions:**

The hermetically sealed shipment lot shall be opened under temperature and moisture controlled cleanroom environment only. Customer has to follow the according rules for disposition of material that can be hazardous for humans and environment.

**Packing**

Chips are placed on a blue foil, which is fixed in a yellow frame of 5” diameter.
For shipment the wafers of a shipment lot are arranged to stacks. The top and bottom of the stack is covered by a dummy disk to protect the top and bottom wafer from damage. The whole package is fixed by rubber strings and hermetically sealed in a plastic bag for storage and shipment. Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You will have to bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

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*[1)] Typical (refered to as typ.) data are defined as long-term production mean values and are only given for information. This is not a specified value.*

*[2)]A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.*

*[3)]Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.*


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